

CLAIMS

What is claimed is:

1. A waste toner collecting device of an electrophotographic printer, comprising:
 - a housing to temporarily hold waste toner removed from an image holding body;
 - an exhaust guide member including an exhaust hole through which the waste toner is exhausted;
 - an opening and closing unit to open and close the exhaust hole;
 - an inlet guide member comprising an inlet path to connect the exhaust hole to an inlet of a waste toner collection tank; and
 - an elastic member to elastically support the inlet guide member so that a gap between the exhaust hole and an inlet side of the inlet path is respectively adjusted when the exhaust guide member ascends and descends.
2. The waste toner collecting device according to claim 1, wherein
 - when the exhaust guide member descends, the opening and closing unit starts to open the exhaust hole in a state where the exhaust hole and the inlet side of the inlet path are closely adhered to each; and
 - when the exhaust guide member ascends, the opening and closing unit completes a closing operation of the exhaust hole before the exhaust hole is spaced from the inlet side of the inlet path.
3. The waste toner collecting device according to claim 2, further comprising:
 - an elastic sealing member installed to the inlet side of the inlet path to elastically close a gap between the exhaust hole and the inlet side of the inlet path as the exhaust guide member ascends and descends.
4. The waste toner collecting device according to claim 2, wherein the opening and closing unit comprises:
 - a shutter rotatably installed to the exhaust guide member to open and close the exhaust hole;
 - a pinion formed on the shutter; and

a rack engaged with the pinion to rotate the shutter when the exhaust guide member ascends and descends.

5. The waste toner collecting device according to claim 1, further comprising:
an auger to transfer the waste toner temporarily held in the housing to the exhaust hole of the exhaust guide member.
6. The waste toner collecting device according to claim 1, wherein the elastic member provided to support the inlet guide member is a compression spring.
7. The waste toner collecting device according to claim 1, further comprising:
an elastic sealing member to elastically close a gap between the exhaust hole and the inlet path.
8. The waste toner collecting device according to claim 7 wherein the elastic sealing member is attached to the inlet path.
9. An electrophotographic printer, comprising:
an image holding body to temporarily hold a toner image when an image is formed;
a waste toner collection tank to hold waste toner removed from the image holding body;
and
a waste toner collecting device to transfer the waste toner removed from the image holding body to the waste toner collection tank, wherein the waste toner collecting includes:
a housing to temporarily hold the waste toner;
an exhaust guide member to provide an exhaust hole through which the waste toner is exhausted;
an opening and closing unit which opens and closes the exhaust hole;
an inlet guide member having an inlet path to connect the exhaust hole to an inlet of the waste toner collection tank; and
an elastic member to elastically support the inlet guide member so that a gap between the exhaust hole and an inlet side of the inlet path is respectively adjusted when the exhaust guide member ascends and descends.

10. The electrophotographic printer according to claim 9, wherein
when the exhaust guide member descends, the opening and closing unit starts to open
the exhaust hole in a state where the exhaust hole and the inlet side of the inlet path are closely
adhered to each; and
when the exhaust guide member ascends, the opening and closing unit completes a
closing operation of the exhaust hole before the exhaust hole is spaced from the inlet side of the
inlet path.

11. The electrophotographic printer according to claim 10, wherein the waste toner
collecting device further comprises an elastic sealing member installed on the inlet side of the
inlet path to elastically close a gap between the exhaust hole and the inlet side of the inlet path
as the exhaust guide member ascends and descends.

12. The electrophotographic printer according to claim 10, wherein the opening and
closing unit comprises:

a shutter rotatably installed to the exhaust guide member to open and close the exhaust
hole and in which a pinion is formed; and
a rack engaged with the pinion to rotate the shutter when the exhaust guide member
ascends and descends.

13. The electrophotographic printer according to claim 9, wherein the waste toner
collecting device further comprises:

an auger to transfer the waste toner temporarily held in the housing to the exhaust hole
of the exhaust guide member.

14. The electrophotographic printer according to claim 9, wherein the elastic member
provided to support the inlet guide member is a compression spring.

15. The electrophotographic printer according to claim 9, wherein the waste toner
collecting device further comprises an elastic sealing member to elastically close a gap between
the exhaust hole and the inlet path.

16. The electrophotographic printer according to claim 15, wherein the elastic sealing member is attached to the inlet path.

17. A method of collecting waste toner of an electrophotographic printer having an exhaust guide member including an exhaust hole, an inlet guide member including an inlet path, and an opening and closing unit, the method comprising:

descending the exhaust guide member when the exhaust hole is closed;
closely adhering exhaust hole and an inlet side of the inlet path to each other;
opening the exhaust hole via the opening and closing unit, and
closing the exhaust hole via the opening and closing unit before the exhaust hole is spaced from the inlet side of the inlet path.

18. A waste toner collecting device of an electrophotographic image forming apparatus, comprising:

a housing to hold waste toner removed from an image holding body;
an exhaust guide member provided to an end portion of the housing;
an exhaust hole provided on the exhaust guide member through which the waste toner is exhausted;
an opening and closing unit to open and close the exhaust hole;
a waste toner collection tank to receive the waste toner;
an inlet guide member to connect the exhaust hole to the waste toner collection tank;
and
an elastic member to elastically adjust a space between the inlet guide member and the exhaust hole when the exhaust guide ascends and descends.